

THE EFFECT OF NUTRITION EDUCATION ON THE ENHANCEMENT OF HEALTHY FOOD KNOWLEDGE OF SCHOOL AGE CHILDREN

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Abstract

Nutrition education is an educational program to increase knowledge and attitudes toward nutrition. Higher nutritional knowledge will affect food consumption attitudes and behaviors. Nutrition education includes several activities as part of a two-way communication process for knowledge improvement which can help one understand and overcome nutrition problems. This study aims to determine the effect of nutritional education provision on the enhancement of children's healthy food knowledge and provide information on the proper and correct consumption of healthy foods in the case of public elementary school of 16 Purwodadi, Grobogan. In this study, 66 fifth graders were involved as respondents. The respondents were divided into 2 classes, namely, the education class and the non-education class. This research began with a pre-test to collect initial data, followed by provision of education four times over a period of three days for the education class. After 2 months, a post-test was conducted to collect the final data using online questionnaire. The results showed that the provision of education did not significantly affect the respondents' knowledge about healthy food but could change the consumption behavior for some food. However there was a differences in mean value of knowledge after education for some questions. In the true/false questions about junk foods, two results were found to change after giving a nutrition education. Such efforts need to be done to improve food consumption and consumer behavior along food.

Keywords: Nutrition education, fast food, healthy food

1. Introduction

Nutrition education is an activity with an educative approach to enhance knowledge and is a persuasive effort to change one's attitude toward nutrition. Better nutrition knowledge will influence food consumption attitudes and behaviors. Education can be implemented with various methods and media. The use of media as aids for education will not only make it clear and easy for the participants to understand and receive the materials delivered, but also help the educators with the delivery (Safitri, 2016).

Nutrition education is a discipline which enables an individual to choose and maintain an eating pattern based on principles of nutrition science. Nutrition education covers numerous activities as part of a two-way communication process for knowledge improvement which can help one understand and overcome nutrition problems (Pramudyari, 2017).

Nutrition education is an accessible effective tool for improving nutrition and health in education programs with a focus on healthy foods. Nutrition education and knowledge do not always directly affect an individual's nutrition behavior, but it can significantly influence attitudes as well as other psychosocial factors which directly affect nutrition behaviors

(Kostanjevec, Jerman & Koch, 2011). According to (Hons, 2002), it is possible to implement nutrition education, but it is not the only factor which can change one's behavior. (Harnack, Block & Lane, 1997) stress that nutrition education is a key element in improving healthy eating patterns for life, and it must be started from an early stage of life.

One of the factors which influence one's nutritional status is lack of nutrition knowledge. This lack of knowledge will undermine one's ability to apply nutrition information in daily life. One's knowledge can be improved by providing nutrition education as early as possible. This can be done through provision of education for school children (Rahmawati, Sudargo & Pramastri, 2007). Lack of nutrition knowledge and wrong selection of foods were reported to influence nutritional status (Sediaoetama, 2000). Food is a paramount factor in child's development. Given that snacks provide the energy and nutrition contents needed for child's development, which snacks are to be selected may influence the quality of foods consumed by children. More care should be applied to child's nutrition problems as they are influential to child's growth and development, and the impact will be apparent during adulthood.

Snacks become a special concern as they are commonly consumed by school children, and consumption of these foods leads to a lot of dangers. Most children are into snacks due to their bright colors, delicious tastes, and affordability. For this reason, snacks hold a critical role in school children's growth and learning achievement (Septiana & Suaebah, 2018).

It is important to pursue healthy food knowledge for its role as an internal factor of snack consumption. Healthy food knowledge refers to elementary school children's understanding of foods with balanced nutrition, food health, and use of additives in snacks. There are many who buy a snack just because they like it without even knowing what contents are contained within. This may adversely impact health as many elementary school students are still unaware of how to choose healthy snacks in the school environment.

Purwodadi is the capital of Grobongan Regency, Central Java. One of the public elementary schools in Purwodadi, SDN 16 Purwodadi, is established on J. M.H. Thamrin No. 5 Purwodadi, precisely across the Krida Bhakti Sport Center Purwodadi near the Purwodadi five-point intersection. Around the school many restaurants and snack vendors are established, influencing children's consumption and fast foods and selection of favorite snacks. At SD Negeri 16 Purwodadi, not only do they go through teaching and learning processes, the students also participate in intensive extracurricular activities. Close proximity with numerous food vendors and the presence of a canteen selling fast foods at school bind the students to buying fast foods. At the time of this research, the elementary school had a teaching staff of 19 people, including one headmaster, five civil-servant teachers, and 13 non-permanent teachers. There were 437 students consisting of 218 male students and 219 female students. Their parents belonged to the lower-middle class. Most of the fathers did odd jobs and most of the mothers either did odd jobs too or served as housewives.

Based on the survey results, there was no investigation conducted at SDN 16 Purwodadi concerning nutrition education and specific instruction on healthy food consumption, of which the students had a poor understanding. The school is situated at the heart of Purwodadi, and its surrounding is teemed with sellers of snacks such as *cilok*, tempura, sausages, roast meatballs, iced drinks with syrup, packaged snacks, and many others. This research seeks to determine the effect of nutrition education provision on child's knowledge of healthy food consumption and provide accurate information on healthy food consumption. It is expected that this education will better inform children in selecting healthy foods through the provision of nutrition information.

2. Materials and Methods

This research was conducted at SDN 16 Purwodadi Grobongan from February through April 2020. It is a quasi-experimental study with control group pretest-posttest design. This research drew a comparison between two groups. The data collected were processed by SPSS. The subjects of this research were 66 fifth graders who were assigned to two classes, A and B, equally. Class A was given education, while Class B was not. Data collection was conducted with a questionnaire, which was segregated into four parts: questions of the respondents' personal data, questions on their knowledge, questions on their attitudes, and questions on their food consumption behaviors. Nutrition education was given to class A, but was not to class B. Post-test data were extracted online via Google Forms two months after the last education material was delivered in order to see any difference in the respondents' health food knowledge. The data acquired with questionnaire were scored and analyzed with SPSS 20. They were then subjected to reliability test, normality test, one-way ANOVA, and Kruskal-Wallis test. The frequencies derived are presented in an open table.

3. Results and Discussion

The act of choosing snacks at school is not necessarily the responsibility of the students. Good nutrition knowledge is inapplicable if no supporting conditions exist around the school. The school certainly must act as the foremost filter in determining which snacks are suitable for sale in its environment according to the prevailing nutrition rules. This active role on the school part is expected to enable the students to decide correctly on which snacks to be consumed.

Table 1. Kruskal Wallis test to detect the student knowledge about healthy food

Nr	Statement	Mean ± SD			
		Class with nutrition education		Class without nutrition education	
		<i>Pre Test</i>	<i>Post Test</i>	<i>Pre Test</i>	<i>Post Test</i>
	Junk food same as fast .food	1.12 ± 0.331 ^a	1.21 ± 0.415 ^a	1.00 ± 0.000 ^a	1.27 ± 0.452 ^b
	You can use French fries as a replacement of a breakfast	1.30 ± 0.467 ^a	1.36 ± 0.489 ^a	1.33 ± 0.479 ^a	1.27 ± 0.452 ^a
	Junk food consider as unhealthy food	1.15 ± 0.364 ^a	1.06 ± 0.242 ^a	1.12 ± 0.331 ^a	1,15 ± 0,364 ^a
	Biscuit produce by food industry were using preservative	1.33 ± 0.479 ^a	1.06 ± 0.242 ^b	1.33 ± 0.479 ^a	1.42 ± 0.502 ^a
	We could not focus on the class because we were not having enough breakfast	1.18 ± 0.392 ^a	1.00 ± 0.000 ^a	1.06 ± 0.242 ^a	1.09 ± 0.292 ^a

Consuming sweetened packed drinks more than once a day was an unhealthy life style	1,15 ± 0.364 ^a	1.03 ± 0.174 ^a	1.12 ± 0.331 ^a	1.06 ± 0.242 ^a
Rice + fried chicken + spicy tomato sauce + sweetened ice tea were followed "isi piringku" standard	1.21 ± 0.415 ^a	1.58 ± 0.502 ^b	1.45 ± 0.506 ^a	1.39 ± 0.496 ^a
Drinking fermented milk could facilitate the bowl movement	1.18 ± 0.392 ^a	1.15 ± 0.364 ^a	1.36 ± 0.489 ^a	1.06 ± 0.242 ^b
We have to eat at least 5 different color of fruit and vegetable a day	1.15 ± 0.364 ^a	1.18 ± 0.392 ^a	1.21 ± 0.415 ^a	1.12 ± 0.331 ^a
Tofu and tempe were not enough to fulfill the need to protein	1.52 ± 0.508 ^a	1.70 ± 0.467 ^a	1.70 ± 0.467 ^a	1.58 ± 0.502 ^b

Note:

- Value with different code in the same column showed a significant difference using Kruskal Wallis at 5% of significance level
- Smaller value showed that the respondent were tend to have right answer

According to the analysis results, the education class has good knowledge of junk foods. The education class demonstrated a significant difference between pre-test and post-test in the question "Is it true that manufactured biscuits contain preservatives?", in which case the respondents were inclined to the "false" answer before education but afterward they answered "true". Another question in which a significant difference was demonstrated by the education class was the question "Is it true that rice + crispy fried chicken + chili sauce + iced tea is sufficient for one "piringku" diet?". No significant differences between pre-measurement and post-measurement were found in the rest of the questions. The reason for this was because before education the students already had a good understanding of the questions of healthy foods. However, those who answered "true" to the question "is it true that tofu and tempeh are inadequate for the fulfilment of the protein need of the body?" should be informed that tofu and tempeh have provided enough proteins for the body.

The non-education class also experienced significant differences during the pre-test and post-test, both increases and decreases. Increases were shown by questions 8 and 9, while decreases by questions 1 and 10. This was because after the pre-test (two months later), the students were assumed to have acquired information or knowledge of junk foods from outside the school.

Based on Table 2, no significant difference was shown between pre-test and post-test by the education class (Asymp. Sig. value > 0.05). Meanwhile, a significant difference was presented by the non-education class between the pre-test and post-test in the statement, "I would read the composition list of the food I am to eat."

Table 2. Kruskal Wallis test to detect the consumption behavior of the student

Pernyataan	Mean ± SD	
	Kelas Edukasi	Kelas Non Edukasi

	Pre-test	Post-test	Pre-test	Post-test
I will read the nutrition facts before I eat	1.36 ± 0.489 ^a	1.58 ± 0.663 ^a	1.30 ± 0.467 ^a	1.70 ± 0.637 ^b
Sweetened drinks could be consumed more than three times a day	3.58 ± 1.032 ^a	3.85 ± 0.972 ^a	3.27 ± 1.232 ^a	3.55 ± 0.938 ^a
I will buy food that a bright color	3.94 ± 0.827 ^a	4.24 ± 0.435 ^a	4.09 ± 0.914 ^a	4.21 ± 0.415 ^a
I would like to dine at home than dining outside (restaurant, café, food trucks, etc.)	1.27 ± 0.452 ^a	1.52 ± 0.667 ^a	1.30 ± 0.770 ^a	1.30 ± 0.467 ^a
I would like to choose boiled peanut rather some packed food or industrial processed food	1.79 ± 0.857 ^a	1.73 ± 0.761 ^a	1.76 ± 1.062 ^a	1.91 ± 0.947 ^a

Note:

- Value with different code in the same column showed a significant difference using Kruskal Wallis at 5% of significance level

Smaller value showed the agreement of the respondent to the statement

Food and drink selection habit is the expression of every individual in choosing foods and drinks which will shape his/her eating/drinking behavior. Thus, this expression in choosing foods and drinks would differ between individuals (Khomsan, 2004).

Based on Table 3 in which the respondents' habits in consuming foods and drinks are presented, the education class showed significant differences after the education. Differences were seen in the consumption of fish, yoghurt, burger, pizza, and sweetened drinks, indicating that the respondents' frequencies of consuming those foods and drinks had decreased. This proved that the provision of nutrition education had an influence on the respondents' food and drink consumption habits. As for the non-education class, no significant differences were seen between the pre-test and post-test.

Table 3. Eating behavior of the student (FFQ)

Nr	Food	Mean ± SD of FFQ for			
		Nutrition education		Without nutrition education	
		Pre Test	Post Test	Pre Test	Post Test
Rice		1.03 ± 0,174 ^a	1,06 ± 0,348 ^a	1,06 ± 0,348 ^a	1,00 ± 0,000 ^a
Potato		2.48 ± 1,149 ^a	2,97 ± 1,045 ^a	2,58 ± 1,001 ^a	2,36 ± 0,859 ^a
Corn		2.42 ± 0,902 ^a	2.70 ± 0,984 ^a	2.70 ± 0,951 ^a	2.42 ± 0,830 ^a
Cassava		2.73 ± 1,180 ^a	3.24 ± 1.251 ^a	2.73 ± 1.126 ^a	2.55 ± 1.003 ^a
Noodle		2.36 ± 0.895 ^a	2.48 ± 0.712 ^a	2.70 ± 1.045 ^a	2.70 ± 0.847 ^a
Chicken		2.00 ± 0.935 ^a	2.45 ± 0.905 ^a	2.27 ± 0.801 ^a	2.33 ± 0.816 ^a
Beef/lamb		3.27 ± 1.353 ^a	3.36 ± 1.055 ^a	2.88 ± 1.166 ^a	2.97 ± 1.045 ^a
Fish		1.97 ± 0.918 ^a	2.61 ± 0.998 ^b	2.06 ± 0.899 ^a	2.12 ± 0.960 ^a
Tofu		1.76 ± 1.173 ^a	2.00 ± 1.090 ^a	1.52 ± 0.755 ^a	1.61 ± 0.864 ^a
Tempe		1.52 ± 0.834 ^a	1.73 ± 1.008 ^a	1.52 ± 0.712 ^a	1.58 ± 0.830 ^a
Milk		1.64 ± 1.245 ^a	1.58 ± 1.032 ^a	1.27 ± 0.574 ^a	1.24 ± 0.614 ^a

Yoghurt/fermented milk	2.18 ± 0.917 ^a	2.61 ± 0.899 ^b	2.09 ± 0.879 ^a	2.27 ± 0.944 ^a
Fries (“gorengan”)	1.97 ± 0.918 ^a	1.88 ± 0.781 ^a	2.30 ± 0.770 ^a	2.12 ± 1.111 ^a
Fatty food	2.42 ± 1.146 ^a	2.52 ± 0.795 ^a	2.61 ± 0.899 ^a	2.33 ± 0.854 ^a
Burger	2.82 ± 1.044 ^a	3.91 ± 1.011 ^b	2.79 ± 1.111 ^a	2.91 ± 1.208 ^a
Pizza	3.03 ± 1.045 ^a	4.15 ± 0.939 ^b	3.09 ± 1.128 ^a	3.42 ± 1.200 ^a
Carbonated drinks	3.36 ± 1.270 ^a	3.64 ± 1.141 ^a	3.33 ± 1.291 ^a	3.64 ± 1.168 ^a
Sweetened drinks	2.42 ± 1.032 ^a	3.00 ± 1.000 ^b	2.24 ± 0.936 ^a	2.18 ± 0.769 ^a
Fruits	1.52 ± 0.870 ^a	1.67 ± 0.957 ^a	1.36 ± 0.742 ^a	1.33 ± 0.692 ^a
Vegetable	1.15 ± 0.442 ^a	1.21 ± 0.545 ^a	1.24 ± 0.663 ^a	1.12 ± 0.485 ^a

Note:

- The smaller value refer to the frequency of the volunteer to consume the food, 1 for once a day, 2 for three times a week, 3 for once a week, 4 for once a month, and 5 for once in a year.
- Value with different code in the same column showed a significant difference using Kruskal Wallis at 5% of significance level

Future studies are suggested to collect data with more accurate methods, for example, through interviews with respondents, to derive accurate, clear information. In the future, research on education in instruction may employ visual media such as picture cards, comics, and snakes and ladders game to assist students in gaining a better understanding, enhance their interests, and relieve their boredom of the education. Further education research should also be conducted on parents in order to improve their understanding for better foods selection for their children.

4. Conclusion

From this research on SDN 16 Purwodadi students, it can be concluded that the students already had a good understanding of foods before education, hence the provision of education did not influence the students’ knowledge of healthy food consumption. However, there did exist differences in averages after education. These differences were identified only in some questions. In the true/false questions regarding junk foods, there were two results found as different between the pre-test and the post-test. In questions regarding food consumption attitudes, no difference was found, but in those on food and drink consumption habits, five results were found to be different between the pre-test and the post-test. Nutrition education provision has a fair influence on students’ knowledge of healthy foods.

5. Acknowledgement

Special thanks to the Ministry of Education, Culture, Research, and Technology for the research funds through the basic research scheme. Many thanks to the great team research for the hard work and joy.

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